

On Quantifier Raising in German

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Abstract

The status of quantifier raising in German and other languages where scope is fairly rigid is debated. The first part of this paper argues that quantifiers in German can undergo covert extraction out of coordinations, and therefore that quantifier raising is available in German. The second part argues that quantifier raising in German is constrained to never move one DP across another. This result might provide part of an explanation of scope rigidity in German.

One interesting difference between English and German concerns quantifier scope: The relative scope of two quantificational noun phrases is in some cases determined by their surface order in German, but not in English. Consider for example the contrast in scopal possibilities between subject and object in the embedded clauses in (1). The English sentence (1a) has an interpretation where the object *every book* takes scope above the subject *at least one student*. The literal German translation (1b) doesn't allow this interpretation (Frey 1993, Krifka 1998, Pafel 1998), but only

allows the pragmatically odd interpretation that there's someone who is simultaneously reading many books. Some other languages (Japanese: Kuroda 1965, Hoji 1985, Korean: Hoji 1985, Chinese: Huang 1982, Aoun and Li 1993) seem to behave more or less like German.

- (1) a. It surprised Otto that at least one student was reading every book.
- b. Otto hat es überrascht, dass mindestens ein Student jedes Buch am
 Otto has it surprised that at least one student every book at
 Lesen war.
 reading was

How could this crosslinguistic variation explained? Consider first quantifier scope in English. It's fair to say that, at this point, there is a consensus in the technical literature on the subject that covert movement of quantificational DPs is possible in English (May 1985, Fox 1995, Kennedy 1997, Bruening 2001, Nissenbaum 2000, and others), and that covert quantifier movement is involved in the derivation of inverse scope of (1a). One approach to the crosslinguistic variation posits that covert quantifier movement isn't available in German, and then tries to understand how this variation might be required.

Section 1 of this paper argues that covert quantifier movement is available in German. I show that quantificational DPs can covertly move out of a coordination in German, subject to the same constraints as such movement is in English.

Section 2 establishes that quantifier movement is subject to another constraint

that bans quantifier movement across another DP. Constraints of this type have been argued for by Huang (1982), Hoji (1985), Aoun and Li (1993), Beck (1996), and Bruening (2001). I show data that specifically argue for the version of this constraint proposed by Huang (1982), which is elegantly implemented by Bruening (2001). Since Bruening (2001) provides different evidence for this constraint from English, this paper establishes then that quantifier movement in German is possible under the same circumstances as in English. This result shows the standard approach of explaining the contrast in (1) is misguided—German and English don’t differ with respect to covert quantifier movement. In section 2.3, I point out a plausible direction one might pursue to fully explain the contrast in (1).

1 Scoping out of Coordinations

1.1 Symmetric Coordinations

In this section, I argue that German allows covert quantifier raising out of coordinations. Buring and Hartmann (1998) present a number of examples where a quantifier in the first conjunct can take scope over both conjuncts of a coordination. Consider the examples in (2):

- (2) a. Zeitungsberichten zufolge hat der Wirt eines gehobenen
 newspaper reports according has the landlord_{NOM} of a high-class
 Restaurants jedem seiner Gäste glykolhaltigen Wein
 restaurant every of his guests_{DAT} glycol containing wine_{ACC}
 empfohlen und ihm davon serviert.
 recommended and him_{DAT} of it served
 (Büring and Hartmann 1998:(57a))

‘According to newspaper reports, it’s true for the landlord of one high-class restaurant and every one of his guests that he recommended him wine containing glycol and he served him of this wine.’

- b. Wie in den Mitteilungen der Universität Frankfurt zu lesen war hat
 as in the news of the University Frankfurt to read was has
 der Präsident noch keinen Hochschullehrer empfangen und ihm
 the president_{NOM} yet no professor_{ACC} received and him_{DAT}
 einen Kaffee angeboten. (Büring and Hartmann 1998:(58a))
 a coffee_{ACC} offered

On one interpretation of both examples, a quantifier in the first conjunct binds a pronoun in the second conjunct.¹ On this interpretation, the binding quantifier must take scope higher than coordination. Hence, the salient interpretation of (2a) paraphrased above has a condition that for every guest a coordination of two things be true: that the landlord recommend him a certain wine, and that the landlord serve him some of this wine. The sentence would not be true if one of the guests had not

¹With some effort, the pronoun can also be understood as referential. In that case, the scope of the quantifier in the first conjunct must be lower than coordination. This is discussed with better examples in the following (see (20)).

been served some of a glycol containing wine.

Structurally, however, (3a) and (3b) seem to involve coordination of phrases where the relevant quantifiers are part of the first conjunct only. For concreteness, I assume here that the coordinated phrases are TPs, though nothing will depend on this assumption.² This structure is shown in (3).

- (3) newspaper reports according to has [the landlord of a high-class restaurant]_i
 [_{*t_i*} every one of his guests glycol-containing wine offered]_{T'} and [_{*t_i*} him of it
 served]_{T'}

This analysis is motivated on the assumption that material outside of a T'-coordination must syntactically and semantically be construed with both T's. This principle itself is a natural consequence of the assumption that coordination expresses a generalized conjunction (Partee and Rooth 1983). On this principle, the left edge of the coordinated phrase can be determined by the following replacement test: Replacing the putative coordinated constituent by just one of the conjuncts should result in a grammatical structure.³ As the data in (4) show, the quantifier *jedem seiner Gäste*

²If pronouns in German cliticize to T and the subject must occupy Spec(TP), the T'-coordination analysis would be forced.

³The test probably has some exceptions, which I however think will be irrelevant. There are two classes of possible exceptions: One, if, as for example Williams (1997) suggests, there are ellipsis processes licensed by coordination, the suggested test might fail in some cases. Namely, the elision of

is only part of the first conjunct according to this test.

- (4) a. Zeitungsberichten zufolge hat der Wirt eines gehobenen
 newspaper reports according to has the landlord of a high class
 Restaurants [ihm davon serviert]_{T'}
 restaurant him of it served
- b. *Zeitungsberichten zufolge hat der Wirt eines gehobenen
 newspaper reports according to has the landlord of a high class
 Restaurants jedem seiner Gäste [ihm davon serviert]_{T'}
 restaurant every of his guests him of it served

At LF, however, the quantifier in the first conjunct must take scope over both conjuncts. A natural assumption is, therefore, that the quantifier *jeden seiner Gäste* undergoes quantifier raising to a position outside of the coordination. As shown in (5), the quantifier can then bind the pronoun in the second conjunct.

- (5) [every of his guests]_j [_{t_i} _{t_j} glycol containing wine]_{T'} and [_{t_i} him_j of it served]_{T'}
- 

some material in the second conjunct might not be licensed, if the coordinated constituent is replaced with just the second conjunct. In such cases, a grammatical sentence should result, by pronouncing the elided material in the second conjunct. This case wouldn't affect the argument in the text, since there's plausible ellipsis in the second conjunct of (2). Two, there might be extraction from one conjunct that doesn't obey the coordinate structure constraint as Johnson (1996). However, Lin (2001) argues that such movement must reconstruct, while my interest here is to show that material that takes scope over both conjuncts, is part of only one of the coordinated constituents. Since Johnson's extraction out of coordination wouldn't predict that this material takes scope over both conjuncts, the arguments in the text would still go through if Johnson's proposal is correct.

Further strong support for the claim that the quantifier binding into the second conjunct must be derived by quantifier raising comes from the following prediction: On this analysis, quantifier raising is forced in (2) because the quantifier binds a pronoun in the second conjunct, and for pragmatic reasons this binding relation is very salient. We expect that quantifier raising will not be obligatory if there's no binding relation. This expectation is borne out by the examples in (6a) and (7a). In both, there's an object quantifier in the first conjunct but no pronoun in the second conjunct. The interpretation of these examples contrast with that of the (6b) and (7b) respectively, which have a pronoun in the second conjunct.⁴ Namely, the object quantifier must take scope below coordination in (6a) and (7a), while it must take scope above coordination in (6b) and (7b).

- (6) a. Jana hat kein Buch gelesen und die Vorlesung nicht verstanden.
 Jana has no book read and the lecture not understood
- b. Jana hat kein Buch gelesen und es nicht verstanden.
 Jana has no book read and it not understood

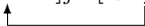
⁴There is a clear difference in intonation between the two sentences in (6) in a neutral context. Namely, the objects are focussed in (6a), while in (6b), the verbs are focussed. This focus is indicated in (i) with capitalization.

- (i) a. Jana has kein BUCH gelesen und die VORlesung nicht verstanden.
 b. Jana hat kein Buch geLEsen und es nicht verSTANDen.

The focus difference is expected, since the entire VPs contrast in (ia) and such a VP-focus is typically realized on the object, while in (ib) only the verbs contrast.

- (7) a. Der Hannes hat keinen Berg bestiegen und K2 fotografiert.
 the Hannes has no mountain climbed and K2 photographed
- b. Der Hannes hat keinen Berg bestiegen und ihn fotografiert.
 the Hannes has no mountain climbed and it photographed

Consider the interpretations of (6a) and (6b) in more detail. (6b) says that Jana is a good student: she understood every book she read. (6a), on the other hand, says that Jana is a bad student: she read no book and she didn't understand the lecture. The interpretation of (6b) is predicted on the basis the LF-representation in (8) where *kein Buch* underwent quantifier raising out of the first conjunct.

- (8) Jana_i has [no book]_j [t_i t_j read]_{TP} and [t_i it_j not understood]_{TP}
- 


The interpretation available for (6a) is also predicted on the analysis proposed above. Namely, it is the interpretation of the LF-structure in (9) where the object quantifier *kein Buch* remains in the first conjunct. (9) will only be true if it's true a) that Jana read no book and b) that Jana didn't understand the lecture.

- (9) Jana_i has [t_i no book read]_{TP} and [t_i the lecture not understood.]_{TP}

The availability of interpretation (9) shows that *kein Buch* can take scope below coordination if it doesn't bind a pronoun in the second conjunct. What remains unexplained so far is that the interpretation of (9) is, in fact, the only possible interpretation for (7a). In particular, given what was said so far, we expect that the

representation in (10) should also be possible for (7a), where *kein Buch* takes scope above the coordination.

(10) *Jana_i hat [kein Buch]_j [t_i t_j gelesen]_{TP} und [t_i die Vorlesung nicht verstanden]_{TP}



If the LF-structure (10) was possible, the sentence should be true if one of conjuncts a) Jana read it and b) Jana understood the lecture is false for all the books. Hence, the sentence should be true if Jana didn't understand the lecture but understood all the books. This is because for no book both of a) and b) will be true, since b) is false. But, this interpretation isn't available for the sentence under consideration, and therefore representation (10) must be ruled out. Descriptively, QR out of coordination is possible only if the moving quantifier binds a pronoun in the second conjunct. As we'll see in the next section, such a restriction on QR out of coordination is in fact independently motivated, and therefore, the contrasts in (6) and (8) are expected on the analysis proposed here.

1.2 QR and the Coordinate Structure Constraint

Ruys (1993:31–39) notes facts in English that are reminiscent of those in the previous section. He claims that Quantifier movement out of coordination in English is possible only if the phrase undergoing quantifier raising binds a pronoun in the second conjunct. (11) presents evidence from English corroborating Ruys (1993) claim. As


Fox (1995) points out, only (11b) allows scope of the object above the subject. Furthermore, this construal requires that the object quantifier bind the pronoun in the second conjunct of (11b).

(11) (Fox 1995:(56))

- a. A student likes every professor and hates the dean. (*every \gg a)
- b. A student likes every professor_i and hates his_i assistant. (every \gg a)

The structure in (12) is ruled out for (11a) by Ruys's proposal.

(12) *[every professor] [a student]_i [t_i likes t_j] and [t_i hates the dean]



The contrast in (13) is analogous to the German examples in (6). As in German, quantifier raising out of coordination is only allowed in (13a) where the moving quantifier binds a pronoun in the second conjunct.

- (13) a. Jana read [no book]_i and misunderstood it_i.
 b. Jana read [no book]_i and misunderstood the lecture.

Ruys (1993) and Fox (1995) relate the condition on QR out of coordination to the coordinate structure constraint of Ross (1968). As in English, overt extraction out of coordination in German is also subject to the coordinate structure constraint, as illustrated by (14).

- (14) a. Welchen Roman_i hat die Anna t_i gekauft und ihre Mutter t_i gelesen.
 which novel has the Anna bought and her mother read
- b. *Welchen Roman_i hat die Anna t_i gekauft und ihre Mutter sie
 which novel has the Anna bought and her mother her
 ausgelacht.
 laughed-about

Therefore, covert movement out of coordination should also be subject to the same restriction as in English. This directly predicts the pattern of judgements observed in the previous section.

1.3 Asymmetric Coordination

Data from asymmetric coordination confirm the picture argued for so far. Consider the facts in (15) and (16). In both examples, there's an object quantifier in the first conjunct. In (15a) and (16a), there's furthermore a pronoun this quantifier can bind in the second conjunct and in fact on the salient interpretation of these examples does bind. The salient interpretation of (15a) and (16a) is one where the object quantifier, *keinem Clown* and *keinen Berg* respectively, takes scope above coordination.⁵ (15b)

⁵Büiring and Hartmann (1998) also note the example in (i) of asymmetric coordination where a quantifier in the first conjunct takes scope and binds a pronoun in the second conjunct.

- (i) Im Zirkus Krone steht hinter keinem Löwen eine Dompteuse und krault ihm das Fell.
 In the circus Krone stands behind no lion a trainer and pets him the fur
 (Büiring and Hartmann 1998:(31a))


and (16b), where there's no pronoun in the second conjunct, on the other hand, allow only the interpretation where the object quantifier takes scope below coordination.

- (15) a. Im Zirkus ist der Kai keinem Clown begegnet und hat ihn nicht
in the circus is the Kai no clown run into and has him not
bejubelt.
cheered
- b. Im Zirkus ist der Kai keinem Clown begegnet und hat die Löwen
in the circus is the Kai no clown run into and has the lions
nicht bejubelt.
not cheered
- (16) a. Im Himalaya ist Jonathan keinen Berg raufgestiegen und hat
in the Himalaya is Jonathan no mountain climbed and has
ihn fotografiert.
him photographed
- b. Im Himalaya ist Jonathan keinen Berg raufgestiegen und hat
in the himalaya is Jonathan no mountain climbed and has
K2 fotografiert.
K2 photographed

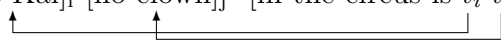
The analysis of asymmetric coordination is still debated (see Johnson (2000) and references therein). However, since it's the status of the subject of the second conjunct that is mysterious, I hope my argument will not be affected. For concreteness, I assume that the subject position of the second conjunct is occupied by PRO, and assume furthermore, the following two special properties: a) this PRO is only licensed in Spec(CP) and b) this PRO must be bound by the subject of the first conjunct. For an illustration of these assumptions, consider first the example in (17).

- (17) Gestern ist der Kai aufgewacht und hat gelächelt.
 Yesterday is the Kai woken up and has smiled

I assume that (17) is a CP-coordination with the surface structure in (18a) and the LF-structure in (18b), which is derived from (17a) by quantifier raising of the subject. Because, by stipulation, the subject of the first conjunct must bind PRO in the Spec(CP) position of the second conjunct, this application of quantifier raising is forced. Note that it obeys the coordinate structure constraint, because the raised quantifier binds a variable in the second conjunct.

- (18) a. [yesterday is the Kai_i woken up]_{CP} and [PRO_i has smiled]_{CP}
 b. Kai_i [yesterday is t_i woken up]_{CP} and [PRO_i has smiled]_{CP}


The analysis of (15) and (16) is now exactly analogous to that of example (6). Consider (15-a). The surface structure of this example is shown in (19a), and the LF structure in (19b). To derive (19b), both the subject and the object raise out of the first conjunct, but since both bind variables in the second conjunct this is in accord with the coordinate structure constraint.

- (19) a. [In the circus is the Kai no clown run into] and [PRO_i has him_j not cheered]
 b. [the Kai]_i [no clown]_j [in the circus is t_i t_j run into] and [PRO_i has him_j not cheered]


As observed above, (15-a) indeed has only one salient interpretation that corresponds to wide scope of *keinem Clown* above coordination. This is the interpretation predicted for (19). The contrast in (15) showed also that scope outside of the coordination is restricted by the coordinate structure constraint.

Consider furthermore example (20) from Buring and Hartmann (1998). The first conjunct contains the temporal quantifier *noch nie*.

- (20) Katharina kam noch nie nach Hause und war betrunken.
 Katharina came yet never to home and was drunk
 (Buring and Hartmann 1998:(23))

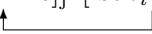
Buring and Hartmann (1998) claim that (20) allows only an interpretation where *noch nie* takes scope above coordination. My consultants, however, agree with me that actually *nie* can take scope both above and below conjunction.⁶ The two interpretations of (20) are paraphrased in (21).

- (21) a. It never happened that Katharina came home drunk. (*nie* \gg *und*)
 b. Katharina has never come home, and she was at some salient past time drunk. (*und* \gg *nie*)

⁶Maybe the choice of tenses in (20) slightly favors the interpretation (21a). Interpretation (21b) is easily available in (i).

- (i) Katharina ist noch nie nach Hause gekommen und war betrunken.
 Katharina is yet never to home come and was drunk

The presence of both interpretations is expected, if we assume that in the verb or tense morpheme in second conjunct of (20) takes an implicit argument that can either be a bound variable or referential (Partee 1973 and others). If the implicit argument is bound by *noch nie*, QR of *noch nie* satisfies the coordinate structure constraint. The derived LF-structure in (22) is expected to have interpretation (21a).

- (22) Katharina_i [noch nie]_j [ist t_i nach Hause gekommen(j)]_{C'} und [war t_i betrunken(j)]_{C'}
- 

If, on the other hand, the implicit temporal argument of the second is referential, QR of *noch nie* would violate the coordinate structure constraint. Therefore in this case, only the LF-representation in (23) is possible, where c refers to some contextually salient time.

- (23) Katharina_i [ist [noch nie]_j nach Hause gekommen(j)]_{C'} und [war betrunken(c)]_{C'}

There's further evidence for this analysis of (20) from two sources. First consider example (24).

- (24) Katharina ist noch nie nach Hause gekommen und war einmal betrunken.
 Katharina is yet never to hom come and was once drunk

In contrast to (20), (24) only allows *noch nie* to take scope below coordination. This difference between (20) and (24) is due to the fact that in (24) the second conjunct also contains a temporal quantifier, namely *einmal*. Since *einmal* binds the temporal

argument of the verb in the second conjunct, the coordinate structure constraint blocks quantifier raising of *noch nie*.

Secondly consider example (25). In the first conjunct of (25), sentential negation *nicht* occurs instead of the quantificational adverb *noch nie* in (20).

- (25) Katharina kam nicht nach Hause und war betrunken.
Katharine came never to home and was drunk

Again, (25) can only be interpreted with *nicht* taking scope below coordination. This is also expected because *nicht* doesn't bind any variables. Therefore, either QR of *nicht* is generally blocked, or at least impossible out of a coordination, because it could never satisfy the coordinate structure constraint.⁷

⁷Schwarz (1999) claims that (ia) and (ib) are ambiguous, and allow negation to scope above coordination. If this judgement is correct, it might indicate that negation in (ib) can move to take scope above the coordination contrary to what I assume in the text.

- (i) (Schwarz 1999:127)
- a. Den Hund hat sie nicht gefüttert und ihn geschlagen.
the dog has she not fed and him beaten
 - b. Den Hund hat sie nicht gefüttert und hat ihn geschlagen.
the dog has she not fed and has him beaten
 - c. Den Hund hat sie nicht gefüttert und sie hat ihn geschlagen.
the dog has she not fed and she has him beaten

In my judgements and those of many other speakers (ib) patterns more with (ic). The judgement on all three sentences in (i) is, however, very difficult probably because of the resumptive pronouns in the second conjunct. With (ii), there is a clear contrast: only (iia) allows wide scope of negation.

- (ii) a. Sie hat den Hund nicht gefüttert und geschlagen.
She has the dog not fed and beaten

2 Constraining QR

2.1 Overt Determination of Scope

In the previous section, I argued that German allows covert movement of quantificational DPs out of a coordination. This result argues against the widely held assumption that German doesn't allow covert quantifier movement.

Now, consider the generalization that has led Frey (1993) and others to claim that German doesn't allow QR.⁸ Frey (1993:179–93) observes that the relative scope of

-
- b. Sie hat den Hund nicht gefüttert und ihn geschlagen.
 She has the dog not fed and him beaten

⁸Another set of data has been used to argue that German doesn't have QR are facts like (i) (Bayer and Kornfilt 1990). Both examples allow only one scopal construal between the matrix verb and the object of the embedded infinitival: in (ia), *kein Fenster* must take narrow scope below *vergessen*, while in (ib), *kein Fenster* must take wide scope above *vergessen*.

- (i) a. Maria hat vergessen kein Fenster zu schließen
 Maria has forgotten no window to close
 forget >> no window, *no window >> forget
- b. Maria hat kein Fenster_i vergessen *t_i* zu schließen
 Maria has no window forget to close
 no window >> forget, forget >> no window

As Wurmbrand (1995) and den Dikken (1995) (arguing from similar data in West Flemish) point out, the unavailability of wide scope in (ia) would follow if QR wasn't available in German. However, this alone doesn't explain the unavailability of reconstruction in (ib). A different approach to (i) is developed in Wurmbrand (2001). She argues that moved infinitival clauses generally are islands

two quantificational DPs in German is largely determined by two factors:⁹ the surface order and the underlying order before the application of scrambling. Consider the facts in (26) ((26a) is repeated from (1)).¹⁰

- (26) a. Otto hat es überrascht, dass mindestens ein Student jedes Buch am
 Otto has it surprised that at least one student every book at the
 Lesen war
 reading was
- b. Otto hat es überrascht, dass [jedes Buch]₁ mindestens ein Student *t*₁
 Otto has it surprised that every book at least one student
 am Lesen war
 at the reading was

In (26a), the subject must take wide scope over the object. Therefore, the sentence is false in a situation where different students are reading the relevant books. In (26b), on the other hand, also scope of the object over the subject is available.

for scope shifting operations: quantifier raising and reconstruction. If the infinitivals in (i) are extraposed, this explains both facts, and this explanation is consistent with the assumption that QR is available in German. Given the evidence for the availability of QR in the previous section, this approach to (i) seems promising to me.

⁹Quantifier scope in German as in other languages is also affected by a variety of pragmatic factors. For the effect and the integration of these factors see Pafel (1998), Heck (2000, 2001), and Fischer (2001) (cf. Kuno *et al.* 1999, 2001, Aoun and Li 2000 on other languages).

¹⁰In matrix clauses, intonation can make further scope construals available in German. The facts in embedded clauses hold for most speakers independent of intonation. For a discussion of the interaction of topicalization, intonation and relative scope in matrix clauses see Krifka (1998).

Essentially the same holds for the double object construction, as shown in (27). Only (27b), where the accusative object is scrambled to the left of the dative, allows an interpretation where the inner object takes scope over the outer, dative object.

(27) (Frey 1993:183)

- a. dass er mindestens einem Gast fast jedes Geschenk überreichte
that he at least one guest almost every present presented
- b. dass er [fast jedes Geschenk]_j mindestens einem Gast t_j überreichte
that he almost every present at least one guest presented

The generalization Frey (1993:185) arrives at is that a QP_1 in German can take scope over another QP_2 if and only if the head of the chain of QP_1 c-commands the tail of the chain of QP_2 at the level of surface structure (cf. Aoun and Li 1993).¹¹ Frey's generalization is mostly corroborated by other researchers findings on German: While there is some debate in the literature whether scrambling of one quantifier over another always gives rise to an ambiguity, there is agreement that Frey's condition is at least a necessary condition for QP_1 to take scope over QP_2 .¹²

¹¹The version of Frey's condition cited here is actually only a preliminary version in his book. The final version Frey gives on p. 206, however, doesn't differ from this preliminary one in its predictions for the phenomena I'm concerned with.

¹²Pafel (1991:51) points out that examples like () seem to allow an interpretation, where the object takes scope over the subject.

- (i) In Italien steht ein Polizist vor jeder Bank.
in Italy stands one policeman in front of every bank

For the following, I adopt a formulation of Frey’s condition that is compatible with the assumption that the interpretation of a sentence is fully determined by its LF-representation following Krifka (1998) and a reinterpretation of Aoun and Li’s (1993) work by Kitahara (1996). The reformulation assumes that a) quantifier raising cannot change the relative scope of two quantificational DPs, and b) scrambling can totally reconstruct. Total reconstruction of movement allows the entire moved phrase to be interpreted in the base position of movement. For example, total reconstruction of the scrambled phrase *fast jedes Geschenk* in (27b) assigns it narrower scope than the dative *mindestens einem Gast*.

The observation that the relative scope of two quantificational DPs cannot be

This could be a case where Frey’s condition is too strong. However, I’m sceptical about the claim that (i) allows inverse scope since (i) is a generic statement and therefore (i) might be a case of pseudoscope in the sense of Fox and Sauerland (1996). Indeed, the episodic statement in (ii) doesn’t allow inverse scope.

(ii) Um Punkt sechs stand ein Polizist vor jeder Bank.

At point six stood a policeman in front of every bank

In fact, Pafel (1991:52) himself observes that inverse scope isn’t available in (iii), which also wouldn’t be understood as generic.

(iii) In Palermo steht einer von diesen Polizisten vor jeder Bank.
in Palermo stand one of these policeman in front of every bank

Hence, I continue to assume that Frey’s generalization is correct.

changed by covert quantifier movement is usually taken to imply that covert quantifier movement feeding interpretation is not possible in German (Frey 1993, Krifka 1998 and others). However, this is not a necessary conclusion and, if my results in the previous section are correct, would in fact make wrong predictions. The alternative, that is consistent with my evidence in the previous section is that quantifier movement is available in German, but constrained in such a way that Frey’s generalization is a corollary of this restriction. In fact, proposals along these lines have been made by Huang (1982), Hoji (1985), Aoun and Li (1993) and Beck (1996). Since Beck (1996) is working on German, consider her proposal first. She suggests (p. 41–45) that a constraint she postulates for covert *wh*-movement, the MQSC, should also be applied to covert quantifier movement. Beck’s (1996:39) definition of the MQSC is given in (28b).

- (28) a. The first node that dominates a quantifier, its restriction, and its nuclear scope is a Quantifier-Induced Barrier.
- b. If an LF-trace β is dominated by a Quantifier-Induced Barrier α , then the binder of β must also be dominated by α .

Beck’s condition successfully accounts for the facts considered up to this point. Consider the two abstract structures in (29).

- (29) a. $\begin{array}{c} \text{*QP}_2 \dots \text{QP}_1 \dots t_2 \\ \uparrow \quad \quad \quad \downarrow \\ \text{QR} \end{array}$
 b. $\begin{array}{c} \text{QP}_1 [\dots t_1 \dots \text{and} \dots \text{pro}_1 \dots] \\ \uparrow \quad \quad \quad \downarrow \\ \text{QR} \end{array}$

Quantifier movement that would alter the relative scope of two QPs is shown schematically in (29a). This is correctly ruled out by (28b) since QP₁ here establishes a Quantifier-Induced Barrier. (29b), on the other hand, illustrates schematically quantifier raising out of coordination. (29b) doesn't violate Beck's (28b) since coordination would not establish a Quantifier-Induced Barrier.

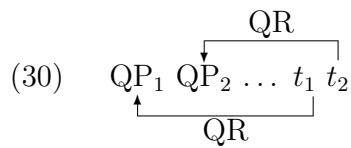
Therefore, the facts considered up to this point may be seen to corroborate Beck's (1996) constraint on covert quantifier movement in German or one of the alternative constraints on quantifier raising mentioned above. In the following section, I consider some data that make more precise the nature of this constraint on quantifier raising and more specifically favor Huang's (1982) formulation of Beck's (1996).

2.2 Parallel QR out of Coordination

As already mentioned, Beck’s proposal is similar to proposals made by Huang (1982), Hoji (1985), and Aoun and Li (1993) based on other languages. Any of the other proposals would also account for the data considered up to this point. In this section, I present data that might distinguish between the proposals. In particular, I argue

these data are problematic for Beck's (1996) proposal, while they are predicted by Huang's (1982) proposal.

The question I'll be concerned with is whether structures with multiple QR of the more than one quantificational DP maintaining their surface scope relation as shown in (30) is possible.



Beck's MQSC doesn't allow structures such as (30) since QP_2 establishes a Quantifier-Induced Barrier that should block the relationship between QP_1 and its trace. Huang (1982) on the other hand proposes that there QR is constrained by an isomorphy condition. His condition states that if QP_1 c-commands QP_2 at s-structure it must also c-command QP_2 at LF. In contrast to Beck's condition, isomorphy is satisfied in (30) since the c-command relationship between QP_1 and QP_2 isn't changed by QR.

In the configuration sketched in (30), quantifier raising doesn't affect interpretation and therefore it cannot be tested whether QR of this type is allowed. However, multiple QR of the kind sketched in (30) will have an effect when it also crosses a coordination. In the following, I argue that a number of predictions that arise from adopting Huang's Isomorphy condition are borne out in these cases. On this approach, there are two factors constraining QR out of coordination: isomorphy and the coordinate structure constraint. The former ensures that the surface order of

quantificational DPs must be maintained. The latter blocks quantifier raising out of a coordination unless the raising quantifier binds a variable in the second conjunct as well.

One prediction made by isomorphy alone is that quantifier raising of two quantificational DPs out of coordination should be possible, but only if the relative scopal order is maintained. In (19), I already assumed multiple QR out of coordination, but the relative scope of the two moving DPs was not at issue there. The examples in (31) bear out the prediction concerning the relative scope of the two moving DPs: The scope of subject and object appearing postverbally is rigid, even when both must undergo quantifier raising to take scope above coordination.

- (31) a. In dem Moment hat genau eine Frau_i jeden Hut_j aufgehabt und
in the moment has exactly one woman every hat on had and
PRO_i wollte ihn_j kaufen.
wanted it buy
- b. Um Punkt 7 Uhr stand mindestens ein Polizist_i vor jeder
at point 7 o'clock stood at least one policeman in front of every
Bank_j und PRO_i hat sie_j beschützt.
bank and has her protected

Both examples in (31) involve asymmetric coordination. As laid out in 1.3, I assume that here the subject must QR to bind a PRO as the subject of the second clause. Furthermore, the object quantifiers in both examples (31) bind a pronoun in the second conjunct and must there raise out of coordination as well. Nevertheless, neither

(31a) nor (31b) allows the object to take scope above the subject. In this respect, the examples in (32) don't differ from corresponding examples without the second conjunct. Note that in both examples the only available interpretation is pragmatically very odd, since it involves in (32a) one woman that wears many hats on top of each other, and in (32b) one policeman standing in front of many banks.

Furthermore, example (31b) contrasts with (32) where the object is scrambled to a position above the subject in the first conjunct. (32) allows the sensible interpretation that in front of every bank there was a policeman protecting it.

- (32) Um Punkt 7 Uhr stand [vor jeder Bank]_j mindestens ein
 at point 7 o'clock stood in front of every bank at least one
 Polizist_i _{t_j} und PRO_i hat sie_j beschützt.
 policeman and has her protected

Examples making the same point with ditransitives are shown in (33). In both examples, the two objects in the first conjunct bind a pronoun in the second conjunct, and therefore must QR out of the coordination. Nevertheless, the scope of the two quantifiers is rigid.

- (33) a. Sie hat mindestens einem Angestellten_i jedes Projekt_j erklärt und
 she has at least one employee every project explained and
 es_i ihm_j übertragen wollen.
 it him transfer wanted
- b. Sie hat genau einem Arzt_i jedes Kind_j vorgestellt und ihn_i vor ihm_j
 she has exactly one doctor every child presented and him of him
 gewarnt.
 warned

A second prediction arises from the interaction of isomorphy with the coordinate structure constraint. As shown in section 1.2, the coordinate structure constraint blocks quantifier raising of a quantificational DP if that DP doesn't bind a variable in the second conjunct. From isomorphy it follows, however, that furthermore no quantifier with scope below such a DP should be able to QR out of a coordination.

This prediction is borne out by the contrast in (34). The two quantifiers in the first conjunct are constrained to their surface scope relation by isomorphy. The continuations in (34a) and (34b) test whether binding by the first quantifier and binding by the second quantifier respectively is possible. The continuation (34a) is here much easier.

- (34) Sie hat mindestens einem Angestellten_i jedes Projekt_j erklärt ...
 she has at least one employee every project explained
- a. ... und ihm_i Kaffee angeboten.
 and him coffee offered
- b. ??... und es_j verlängert.
 and it extended

The contrast in (34) is expected, because the first quantifier can QR out of the coordination without crossing the second quantifier. Therefore, isomorphy isn't violated. Since the second quantifier can remain in the first conjunct, also the coordinate structure constraint is satisfied. To derive (35b), however, either isomorphy or the coordinate structure constraint must be violated. Isomorphy is violated if the second

object undergoes QR out coordination while the first object doesn't. If, on the other hand, both the first and the conjunct raise out of the coordination the coordinate structure constraint is violated since the first object doesn't bind a variable in the second conjunct. Compare also the (34b) with (33a) which shows that QR of both objects is possible if both bind a variable in the second conjunct.

The examples in (35) corroborate this point. While (35a), where the first object binds into the second conjunct, and (35c) where both objects bind into the second conjunct are acceptable, (35b) where only the second object binds into the second conjunct is degraded.

- (35) Sie hat keinem Arzt_i jedes Kind_j vorgestellt ...
 she has no doctor every child presented
- a. ... und ihn_i nicht vorher gewarnt.
 and him not before warned
- b. *... und es_j nicht vorher gewarnt.
 and it not before warned
- c. ... und ihn_i nicht vor ihm_j gewarnt.
 and him not of him warned

Finally consider the contrast in (36). In both, the accusative object binds a pronoun in the second conjunct, while the dative object is a proper name and doesn't bind into the second conjunct.

- (36) a. *[?]Sie hat dem Kai jedes Projekt_i erklärt und es_i verlängert.
 she has the Kai every project explained and it extended

- b. Sie hat [jedes Projekt]_i dem Kai t_i erklärt und es_i verlängert.
 she has every project the Kai explained and it extended

Binding is much easier in (36b) where the accusative object precedes the dative object in the first conjunct. This is expected because QR of *jedes Projekt* in (36b) accords to isomorphy, while QR in (36a) must violate either the coordinate structure constraint or isomorphy.

2.3 Summary and Conclusions

This paper has established two points concerning covert quantifier movement in German. In section 1, I showed that quantificational DPs can move across coordination covertly, if they bind a variable in the second conjunct. I argued that this assumption explains the contrast in (37) (repeated from (6)), where only (37b) allows QR of the object across *und*.

- (37) a. Jana hat kein Buch gelesen und die Vorlesung nicht verstanden.
 Jana has no book read and the lecture not understood
 and \gg no book, *no book \gg and
- b. Jana hat kein Buch_i gelesen und es_i nicht verstanden.
 Jana has no book read and it not understood
 no book \gg and, *and \gg no book

Secondly, I showed that the relative scope of two quantificational DPs in German cannot be changed by QR. This conclusion was based chiefly on data from Frey (1993) that were originally taken to indicate that QR isn't available at all in German.

Section 2.2 suggests that furthermore the correct generalization of the constraint on QR operative in German seems to be Huang’s (1982) isomorphy condition. Specifically, data with multiple QR out of coordination showed that two quantificational QPs can QR in parallel.

Huang’s (1982) isomorphy principle doesn’t easily fit into current syntactic theorizing since it appeals to s-structure and doesn’t seem to have independent conceptual motivation. However, recent work by Bruening (2001) provides further evidence and an explanation of Huang’s (1982) generalization based on the syntactic principle of Shortest Attract.

The proposals made in this paper don’t explain the variation between German and English concerning scope of the object over the subject. However, my results seem to point towards a certain direction. If I’m right, QR is available in German and subject to the same constraints as in English. Therefore, the variation must be due to some difference other than the availability or the properties of QR. One candidate that comes to mind is the status of subjects in German and English. It’s been proposed by a number of people (Wurmbrand 2001, Müller 2001) that the subject in German need not move to Spec(TP),¹³ while in English it’s usually assumed that the EPP forces some such movement.

¹³Similarly, Haider (1993) claims that German doesn’t have a TP (or IP) projection.

References

- AOUN, JOSEPH, and YEN-HUI AUDREY LI. 1993. *Syntax of Scope*. Cambridge, Mass.: MIT Press.
- AOUN, JOSEPH, and YEN-HUI AUDREY LI. 2000. Scope, structure, and expert systems: A reply to Kuno et al. *Language* 76.133–155.
- BAYER, JOSEF, and JAKLIN KORNFILT. 1990. Against scrambling as move-alpha. In *Proceedings of NELS 21*. Amherst, Mass., GLSA, University of Massachusetts.
- BECK, SIGRID. 1996. Quantified structures as barriers for LF movement. *Natural Language Semantics* 4.1–56.
- BRUENING, BENJAMIN. 2001. QR obeys superiority: Frozen scope and ACD. *Linguistic Inquiry* 32.233–273.
- BÜRING, DANIEL, and KATHARINA HARTMANN. 1998. Asymmetrische Koordination. *Linguistische Berichte* 178.172–201.
- DEN DIKKEN, MARCEL. 1995. Verb (projection) raising, scope, and uniform phrase structure. In *Proceedings of NELS 25*, ed. by J. Beckman, 95–110. Amherst, GLSA.
- FISCHER, SILKE. 2001. On the integration of cumulative effects into Optimality Theory. In *Competition in Syntax*, ed. by G. Müller and W. Sternefeld, 151–173. Berlin, Germany: de Gruyter.
- FOX, DANNY. 1995. Economy and scope. *Natural Language Semantics* 3.283–341.

- , and ULI SAUERLAND. 1996. Illusive scope of universal quantifiers. In *Proceedings of NELS 26*, ed. by K. Kusumoto, 71–85. Amherst, GLSA.
- FREY, WERNER. 1993. *Syntaktische Bedingungen für die semantische Interpretation: Über Bindung, implizite Argumente und Skopus*. Berlin, Germany: Akademie.
- HAIDER, HUBERT. 1993. *Deutsche Syntax generativ*. Tübingen, Germany: Narr Verlag.
- HECK, FABIAN. 2000. Tiefenoptimierung. *Linguistische Berichte* 184.441–468.
- . 2001. Quantifier scope in German and cyclic optimization. In *Competition in Syntax*, ed. by G. Müller and W. Sternefeld, 175–209. Berlin, Germany: de Gruyter.
- HOJI, HAJIME. 1985. *Logical Form Constraints and Configurational Structure in Japanese*. Ph.D. dissertation, University of Washington, Seattle.
- HUANG, C.T. JAMES. 1982. *Logical Relations in Chinese and the Theory of Grammar*. Ph.D. dissertation, Massachusetts Institute of Technology, Cambridge, Mass.
- JOHNSON, KYLE. 1996. In search of the English middlefield. Manuscript, University of Massachusetts, Amherst.
- . 2000. Restoring exotic coördinations to normalcy. Unpublished Ms., UMass Amherst.
- KENNEDY, CHRISTOPHER. 1997. Antecedent-contained deletion and the syntax of

- quantification. *Linguistic Inquiry* 28.662–688.
- KITAHARA, HISATSUGU. 1996. Raising quantifiers without quantifier raising. In *Minimal Ideas*, ed. by W. Abraham, S. Epstein, H. Thráinsson, and J.-W. Zwart, 189–198. Amsterdam, The Netherlands: John Benjamins.
- KRIFKA, MANFRED. 1998. Scope-inversion under the rise-fall contour in German. *Linguistic Inquiry* 29.75–112.
- KUNO, SUSUMU, KEN-ICHI TAKAMI, and YURU WU. 1999. Quantifier scope in English, Chinese, and Japanese. *Language* 75.63–111.
- KUNO, SUSUMU, KEN-ICHI TAKAMI, and YURU WU. 2001. Response to Aoun and Li. *Language* 77.134–143.
- KURODA, S.-Y. 1965. *Generative Grammatical Studies in the Japanese Language*. Ph.D. dissertation, Massachusetts Institute of Technology, Cambridge, Mass.
- LIN, VIVIEN. 2001. A way to undo A-movement. Paper presented at WCCFL 20, University of Southern California, Los Angeles.
- MAY, ROBERT. 1985. *Logical Form: Its Structure and Derivation*. Cambridge, Mass.: MIT Press.
- MÜLLER, GEREON. 2001. Harmonic alignment and the hierarchy of pronouns in German. unpublished Ms., IDS Mannheim, Germany.
- NISSENBAUM, JON. 2000. *Investigations of Covert Phrase Movement*. Ph.D. dissertation, Massachusetts Institute of Technology, Cambridge, Mass.

- PAFEL, JÜRGEN. 1991. Zum relativen Quantorenskopis im Deutschen. Bericht 5, Sonderforschungsbereich 340, Universität Tübingen.
- . 1998. Skopus und logische Struktur. Studien zum Quantorenskopis im Deutschen. Technical Report 129, Sonderforschungsbereich 340, Universität Tübingen, Tübingen.
- PARTEE, BARBARA. 1973. Some structural analogies between tenses and pronouns. *Journal of Philosophy* 70.601–609.
- , and MATS Rooth. 1983. Generalized conjunction and type ambiguity. In *Meaning, Use and Interpretation of Language*, ed. by R. Bäuerle, C. Schwarze, and A. von Stechow, 361–383. Berlin: de Gruyter.
- ROSS, JOHN R. 1968. *Constraints on Variables in Syntax*. Ph.D. dissertation, Massachusetts Institute of Technology, Cambridge, Mass.
- RUYS, EDDIE. 1993. *The Scope of Indefinites*. Ph.D. dissertation, Utrecht University.
- SCHWARZ, BERNHARD. 1999. *Topics in Ellipsis*. Ph.D. dissertation, University of Massachusetts, Amherst.
- WILLIAMS, EDWIN. 1997. Blocking and anaphora. *Linguistic Inquiry* 28.577–628.
- WURMBRAND, SUSI. 1995. Infinitives with(out) tense. Manuscript, MIT.
- . 2001. How far can AGREE see? Handout of a talk delivered at Glow 24, Braga, Portugal.